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GROUNDWATER MONITORING REPORT FOR BOCA CHICA FLYING CLUB SITE
UNDERGROUND STORAGE TANK SITE 9 FOR APRIL 2001 WITH TRANSMITTAL LETTER
NAS KEY WEST FL
6/25/2001
TETRA TECH NUS



TETRA TECH NUS, INC.

AIK-01-0198

June 25, 2001

Project Number HK 0395

via Electronic Mail

Byas Glover (Code 18410)
Department of the Navy
SOUTHDIV NAVFACENGCOM
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 110

Subject: Groundwater Monitoring Report for Flying Club Site, UST Site 9, April 2001, Rev. 0,
Naval Air Station Key West, Florida

Dear Mr. Glover:

TtNUS is pleased to submit the enclosed PDF file for the Groundwater Monitoring Report for Flying Club Site, UST Site 9, April 2001, Rev. 0, Naval Air Station Key West, Florida. At your request, a copy of this report is being distributed to the Florida Department of Environmental Protection FDEP for their review and comment or concurrence. I anticipate receiving comments or concurrence on this document from FDEP within the next 30 days.

Please call me at (803) 649-7963, extension 345, if you have any questions regarding the enclosed report.

Sincerely,

C. M. Bryan
Project Manager

CMB:spc

Enclosure

c: Ms. Debbie Wroblewski (Cover Letter Only)
Mr. Joe Fugitt, FDEP
File: 0395-7.3.3

Mr. R. Courtright, NAS Key West
Mr. M. Perry/File

GROUNDWATER MONITORING REPORT
April 2001

for
FLYING CLUB SITE
UST SITE 9

Naval Air Station
Key West, Florida



Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 110

June 2001

Rev. 0

GROUNDWATER MONITORING REPORT
APRIL 2001

for

FLYING CLUB SITE
UST SITE 9

NAVAL AIR STATION
KEY WEST, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS
661 Anderson Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 110

June 2001

PREPARED UNDER THE SUPERVISION OF:



CHUCK BRYAN
TASK ORDER MANAGER
TETRA TECH NUS
AIKEN, SOUTH CAROLINA

APPROVED FOR SUBMITTAL BY:



DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS
PITTSBURGH, PENNSYLVANIA

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ACRONYMS

CLEAN	Comprehensive Long-Term Environmental Action, Navy
CTO	Contract Task Order
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Contaminant Target Level
KAG	Kerosene Analytical Group
µg/l	micrograms per liter
RAP	Remedial Action Plan
TRPH	total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
UST	underground storage tank

1.0 QUARTERLY REPORT

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit the Groundwater Monitoring Report for the referenced Contract Task Order (CTO). This report has been prepared for the U.S. Navy Southern Division Naval Facilities Engineering Command under CTO-110, for the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Contract Number N62467-94-D-0888.

Monitoring results are presented within the body of this report. Data validation results and field documentation are included as appendices in this report.

1.1 SITE OVERVIEW

A monitoring program presented in the Remedial Action Plan (RAP) for the Flying Club Site (Underground Storage Tank [UST] Site 9) at Naval Air Station, Key West, Florida (ABB-ES, 1997), was implemented in August 1999. As stated in the program, four of the site's monitoring wells were sampled for the Kerosene Analytical Group (KAG) parameters for a period of one year. At the end of the program, only one monitoring well (KYW-A-127-MW-6) had concentrations that exceeded Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs). Based on these results, TtNUS recommended that future monitoring at the site include only the sampling of monitoring well KYW-A-127-MW-6 for an additional year (TtNUS, July 2000). In August 2000, FDEP approved the recommendation and requested that monitoring well KYW-A-127-MW-20 be added to the sampling program as a perimeter well (FDEP, 2000). The first quarterly monitoring event was conducted in October 2000.

1.2 MONITORING OBJECTIVES

The objective of the quarterly monitoring program is to evaluate the contaminant plume concentrations until cleanup levels are achieved. The groundwater samples will be analyzed by the KAG, as listed in Chapter 62-770 of the Florida Administrative Code. The FDEP GCTLs for groundwater of low yield/poor quality, as prescribed by Chapter 62-770, are the appropriate GCTLs for the site.

1.3 THIRD QUARTERLY MONITORING

On April 11, 2001, TtNUS personnel collected groundwater samples from the two UST Site 9 monitoring wells, KYW-A-127-MW-6 and -MW-20. All sampling activities were conducted in accordance with the

TtNUS FDEP-approved CompQAP No. 980038. Immediately prior to collection of the groundwater samples, water-level and product measurements were recorded from each site monitoring well. The water-level data was used to determine purge volumes. Depth-to-water measurements, along with top of casing elevations, were also used to calculate groundwater elevations. Free-phase petroleum product was not detected in any monitoring wells during this event. Based on these elevations, groundwater was flowing primarily to the south-southeast at the time of the sampling. Figure 1-1 depicts the groundwater elevations recorded on April 11, 2001. Top of casing elevations, water table elevation data, and depth to water measurements are provided in Table 1-1.

Following collection of groundwater samples, the sample bottles were packed on ice and shipped via overnight transport to Katahdin Analytical Services in Westbrook, Maine, where they were analyzed for the parameters listed in the KAG. Analytical results for the third quarterly groundwater sampling event are summarized in Table 1-2. Figure 1-2 depicts the contaminant concentrations as of April 11, 2001. A copy of the laboratory report is provided in Appendix A.

1.4 CONCLUSIONS AND RECOMMENDATIONS

Benzene, toluene, ethylbenzene, and total xylene concentrations were detected in monitoring well KYW-A-127-MW-6 at concentrations of 5 micrograms per liter ($\mu\text{g/l}$), 1 $\mu\text{g/l}$, 41 $\mu\text{g/l}$, and 5 $\mu\text{g/l}$, respectively. Naphthalene was also detected at a concentration of 70 $\mu\text{g/l}$, and Total Recoverable Petroleum Hydrocarbons (TRPH) was detected at a concentration of 1,400 $\mu\text{g/l}$. In addition, lead was detected at a concentration of 5.6 $\mu\text{g/l}$. All detected concentrations were below their GTCLs in well KYW-A-127-MW-6 during the quarter. These levels were below concentrations detected during the previous two quarters.

The volatile organic compounds ethylbenzene and total xylenes were detected in well KYW-A-127-MW-20 at concentrations of 11 $\mu\text{g/l}$ and 4 $\mu\text{g/l}$, respectively. Naphthalene was detected at 200 $\mu\text{g/l}$ and TRPH was detected at 3,600 $\mu\text{g/l}$. The detected concentration of naphthalene was at the GCTL. Lead was detected at a concentration of 16.3 $\mu\text{g/l}$. All other detected constituents were below their respective GCTLs; however, their levels in well KYW-A-127-MW-20 during this quarter were higher than those detected during previous quarters.

Results of third quarter monitoring indicate that hydrocarbon levels have decreased substantially in KYW-A-127-MW-6 from the previous quarter. However, naphthalene and TRPH concentrations increased in KYW-A-127-MW-20. Due to the lack of substantial decreases in the concentrations of some contaminants following several quarters of groundwater monitoring, TtNUS is recommending that quarterly monitoring be halted, and a treatability study be performed to investigate the efficacy of enhancing the degradation of contaminants under aerobic conditions. Initiation of such a treatability study

presents an aggressive action to remediate the dissolved-phase hydrocarbons in the groundwater to concentrations below Florida's GCTLs.

TABLE 1-1

**TOP OF CASING ELEVATIONS, WATER TABLE ELEVATIONS, AND TOTAL DEPTHS
FLYING CLUB UST SITE 9
NAVAL AIR STATION
KEY WEST, FLORIDA**

Well ID	Total Depth	Top of Casing Elevation ^(a)	April 11, 2001	
			Groundwater Level	Groundwater Elevation
KYW-A-127-MW-5	11.62	10.00	4.56	5.44
KYW-A-127-MW-6	14.76	9.07	3.55	5.52
KYW-A-127-MW-20	14.50	9.36	4.01	5.35

- a. TtNUS assigned an arbitrary 10-foot top of casing elevation for well KYW-A-127-MW-5 to provide a benchmark against which to establish top of casing elevations for the other wells listed in this table.

TABLE 1-2
GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY
UST SITE 9
NAVAL AIR STATION
KEY WEST, FLORIDA

Sample		Benzene	Ethyl- benzene	Toluene	Total Xylenes	Naph- thalene	TRPH	Lead
Location	Date							
Cleanup Target Level ⁽¹⁾		10	300	400	200	200	50,000	150
KYW-A-127-MW-6	10/5/00	20	280	7	40	92.0	1,500	7
	1/19/01	51	400	18	93	160	1,900	<8.7
	4/11/01	5	41	1*	5	70	1,400	5.6
KYW-A-127-MW-20	10/5/00	<5	3*	<5	<5	11	<500	5.9
	1/19/01	<5	12	<5	<5	140	2,500	15.9
	4/11/01	<5	11	<5	4*	200	3,600	16.3
FC-DUP-01 (MW-6)	10/5/00	21	250	7	44	110	1,500	7.5
	1/19/01	55	460	19	99	160	1,800	<8.6

NOTES:

1 Groundwater cleanup target levels as specified in Table VIII of Chapter 62-770, Florida Administrative Code.

* Denotes values less than the laboratory's Practical Quantitation Level.

TRPH Total recoverable petroleum hydrocarbons.

All contaminant concentrations measured in ppb (µg/l).

REFERENCES

ABB-ES (Environmental Services, Inc.), 1997. Remedial Action Plan, Flying Club Site (UST Site 9), Naval Air Station, Key West, Florida, prepared for Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Charleston, South Carolina, August.

FDEP (Florida Department of Environmental Protection), 2000. Re: Annual Groundwater Monitoring Report for Flying Club Site, Key West, Florida, August.

TtNUS (Tetra Tech NUS, Inc.), 2000. Annual Groundwater Monitoring Plan Report for Flying Club UST Site 9, Naval Air Station, Key West, Florida, prepared for Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Charleston, South Carolina, July.

APPENDIX A
DATA VALIDATION PACKAGE

AIK-01-0198

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CTO 110

APPENDIX B
FIELD DOCUMENTATION

